

A Regional Study of Agriculture in
Communist China, 1957-66

Foreword

Kwangtung Province was chosen for this regional agricultural study primarily because it is the province for which the most detailed information is available. Kwangtung is typical of the areas that cultivate rice in South China, but is not representative of the wheat areas of North China. Agriculture in this province is highly intensive and has had a reasonably high priority in the allocation of agricultural investment.

A comprehensive regional study of China is difficult because data are not reported on a provincial basis.

The present report represents a first cut at a regional analysis and does not treat thoroughly all aspects of agriculture in Kwangtung.

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1. Agricultural Production

Kwangtung Province, a major agricultural area, has more than 3 million hectares under cultivation and, counting double cropping, more than 6 million hectares sown to crops. In normal years Kwangtung is self-sufficient in rice, but in poor years, imports rice from neighboring provinces. Sweet potatoes are the main supplement to rice, and only small amounts of wheat and miscellaneous grains are produced. More than one-third of the sugar consumed in China is produced from cane grown in Kwangtung. The production of vegetables, fruit, poultry, and meat is sufficient to meet local needs, and small amounts are exported daily to Hong Kong.

The total cultivated area in Kwangtung was about 15 percent lower in 1966 than in 1957. We do not know the reasons for this decline, but it was almost certainly caused in part by construction of roads and new irrigation projects. (See Table 1). The area sown to rice has declined by nearly one million hectares since 1957, but rice yields have increased substantially because of (a) the substitution of other crops for low-yielding upland rice, (b) the increased application of chemical fertilizer, (c) the increased use of green manure crops as fertilizer, and (d) improvements to paddy fields, including mechanical pumps and better irrigation. During 1960-66, the area sown to sweet potatoes on collective fields declined steadily as production of potatoes on private plots increased. In the case of sugar cane, the sown area in 1965-66 was more than twice the low point of 1962.

The production of rice, the major crop in Kwangtung, was about 20 percent lower in 1961 than in 1957, a drop caused primarily by poor weather. (See Table 2). The output of rice had recovered fully by 1963 and totaled over 10 million tons annually through 1966. The production of raw sugar fell by more than 50 percent during 1960-62, as land was diverted to other foods, and did not return to its 1957 level until 1965. The sweet potato crop in 1961 was barely half that of 1957, but a combination of private and collective cultivation had restored production to normal by 1965. The production of subsidiary foods, such as vegetables, fruit, meat, poultry and eggs, increased substantially when private plots were reinstituted in 1961 and has remained at a high level.

2. Private Plots

Private plots account for about 7 percent of the cultivated area of Kwangtung, about the same as for South China, but only 4 percent of the cultivated area of North China. The peasants may produce vegetables and tubers and raise poultry and pigs, although the production of grain is forbidden. The average size of a plot for a family of five is about 7,000 square feet, or one-sixth of an acre.

Table 1
Estimated Use of Cultivated Land in Kwangtung Province

	(1,000 Hectares)														
	1949	1953	1954	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	
Cultivated area					3860	25X1					3600	3333	3300	3287	
Acreage of rice paddies	2000				2933		2867				2000	2000	2200	2333	
Acreage of dry fields					927						1600	1333	1100	954	
Sown area (including double cropping)	6050		6667		7642										
Green manure crops	233	64		39	351						128	160	400	667	
Acreage of crops	5817				7291										
Grain	5585	6467	6067		6694	6500	6502	6567							
Rice	4687	5118	4615	5104	4847	4534	4341	4300	4000	3986	3793	3867	4066	3867	
Wheat	93	120	133	315	239	267	208	200		183	80	60	227	200	
Miscellaneous grains	101	316	432		364	148	534	667	734						
Tubers	724	913	887	1027	1242	1551	1419	1400	1200	950	900	950	800	767	
Soybeans	99	117			110										
Industrial crops	113				487	600									
Sugar cane	33	67	67	86	117	159	133	147	93	69	80	133	181	133	
All other industrial crops	80				370	441									

a. Estimates are based on data reported by Communist China. Blank spaces indicate data not available or insufficient to make an estimate.

Table 2

Estimated Production of Specified Crops, in Kwangtung Province, 1957-1966^{a/}

	(1,000 Metric Tons)									
	<u>1957</u>	<u>1958</u>	<u>1959</u>	<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>
Rice	9,400	10,300	8,200	8,200	7,500	8,900	10,200	10,600	10,800	10,200
Sweet Potatoes ^{b/}	2,000	N.A.	N.A.	1,400	1,100	1,400	1,400	1,600	2,200	2,000
Fruits and Vegetables	N.A.	N.A.	N.A.	2,500	5,000	5,900	4,700	4,300	4,200	3,800
Meat, Poultry and Eggs	N.A.	N.A.	N.A.	335	460	605	750	895	985	970
Sugar ^{c/}	400	N.A.	450	377	165	188	210	292	436	332

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Table 4

Average Per Capita Intake of Calories and Nutrients, Kwangtung Province, 1957, 1959-1966^{a/}

<u>Daily Per Capita</u>		<u>1957</u>	<u>1959</u>	<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>
Total Calories	Rural				1,460	1,530	1,780	1,980 ^{b/}	2,100	2,070
	Urban				1,680	1,690	1,800	1,950 ^{b/}	1,930	1,870
Percent from official rations	Rural				91.8	79.1	76.1	75.3	74.0	62.0
	Urban				93.4	82.9	81.5	77.3	72.7	71.7
Percent from private plots ^{c/}	Rural				4.5	7.7	6.2	5.0	7.1	4.3
	Urban				0.4	0.3	0.1	0.1	0.8	0.1
Percent from free markets ^{d/}	Rural				1.5	4.1	7.9	7.6	7.9	10.6
	Urban				1.1	4.2	6.5	8.1	9.8	23.2
Percent from other sources ^{e/}	Rural				2.2	9.1	9.8	12.1	11.0	3.1
	Urban				5.1	12.6	11.9	14.5	16.8	5.1
Total calories from cereals	Rural	1,770	1,320	1,240	1,240	1,150	1,420	1,580 ^{f/}	1,630	1,510
	Urban	1,230	1,190	1,460	1,480	1,380	1,510	1,660 ^{f/}	1,590	1,460
Grams of Protein	Rural				33	35	39	43	45	44
	Urban				37	38	39	43	43	38
Grams of Fat	Rural				12	17	19	20	22	20
	Urban				19	26	26	25	30	26

Despite their small size, the private plots are much more productive than the collective fields. The peasants cultivate the plots with extreme care and lavish on them generous amounts of night soil and pig manure. As a result, the plots have helped to improve the quality of the diet by supplying more nutritious foods such as vegetables and meat, and they have provided a large share of the daily caloric intake from non-grain foods. The peasants may keep everything produced on private plots; usually they consume some of the food and sell the remainder on local free markets.

In Kwangtung, as elsewhere in China, the regime complains that farmers spend too much time on private plots and not enough on the collective fields. The leadership still tolerates the plots, however, because their produce cannot be replaced by the collectives. The cultural revolution has adversely affected private farming in a few areas of Kwangtung, but there is no evidence that these disruptions are widespread.

3. Disposition of the Rice Harvest

Each production team surrenders a portion of its rice harvest to the state in the payment of taxes and compulsory sales at low fixed prices. This rice is used to feed the urban areas. In an average year, about a third of the harvest is set aside for seed, reserves, animal feed, and miscellaneous uses.

The rice collected as taxes is based on the "normal yield" of the land, which in some areas has been set higher than the average yield. The Chinese say that both the tax base (the "normal yield") and the tax rates remain unchanged for a period of years. The average tax rate for Kwangtung was established at 14.5 percent in 1958, and there is no indication that it has been changed since that time. Provincial authorities are free to vary the tax rate from one hsien to another, but must maintain the overall average, and local authorities may vary the rate for production teams within each hsien.

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during 1961-66, taxes paid by individual production teams ranged from less than 10 percent to more than 50 percent of the rice harvest, and that the greatest concentration was in the range of 11 percent to 20 percent. These data also show that the share of the rice harvest taken as taxes was higher in years of poor harvest and lower in years of good harvest, suggesting that the "normal yield" and the tax rates have remained relatively unchanged.

Production teams are obligated to sell to the state at fixed prices a specified proportion of the rice that remains after deduction of taxes. [redacted] the share of the rice harvest sold to the state during 1961-66 was less than 10 percent in some cases and more than 60 percent in a few cases, with the greatest concentration in the range 21 percent to 30 percent. [redacted] the state may have procured for taxes and compulsory sales combined about 30 percent to 40 percent of the rice harvest in Kwangtung during 1961-66.

About 4 percent to 5 percent of the rice harvest is held for seed. The amount of rice going to reserves of the local units is unknown, but has probably been small since 1960. Some rice bran is used as animal feed, but the amount is not known. No information is available on the amount of rice used for feeding people who are incapacitated or who work in water conservancy and other special projects.

The rice that remains after all deductions have been made is distributed to members of the production team. A basic ration is given to each individual according to his age and grade, and the remainder is distributed according to the number of work points each peasant has accumulated. The work points are defined for specific tasks performed and are designed in part as an incentive to the peasants to work hard on the collective fields.

4. Agricultural Improvements

By the end of 1965 2.3 million hectares in Kwangtung were irrigated, about 70 percent of the total cultivated area. Only about 60 percent of the cultivated area, however, had irrigation facilities adequate to overcome intensive drought conditions over a period of time. The installation of electric pumps since 1960 has improved many irrigation facilities. By the end of 1966 there were 5,000 pumping stations in operation, with a total capacity of 330,000 kilowatts, serving more than 20 percent of the area of rice fields in the province. About 4,000 of these stations were located in the Pearl River Delta serving about 467,000 hectares.

Kwangtung uses large quantities of organic materials and of chemical fertilizers such as ammonia sulphate and urea. In 1966 the average application rate of chemical fertilizers on rice crops was 185 kilograms per hectare (gross weight), as compared with 122 kilograms per hectare in 1962, an increase of about 50 percent. We do not know the average application rate on grain for China as a whole, but believe that it is lower than in Kwangtung. Rice and sugar cane, respectively, receive the

In agricultural science the focus is on improved seeds, better water conservancy, and the proper use of fertilizer. Cadres are urged to make full use of the services of veteran farmers, to improve model fields, and to carry out demonstrations at various levels. Communes, brigades, and teams are all required to set up high-yield demonstration plots.

Experiment stations are being built in many areas in an attempt to develop new seed strains. At the beginning of 1966 about 28,000 hectares of land were allocated for the testing of new rice strains, and similar allocations probably have been made for other crops.

Major emphasis is being placed on the rotation of crops as an important step in raising soil fertility. The winter cultivation of green manure crops, to be plowed back into the soil prior to the sowing of the early rice crop, is now encouraged. Other cultivation techniques include wide-space planting, the selection of strong seedlings, and the use of nylon netting in seed beds. In order to assist with the processing and harvesting procedures and to increase the efficiency of the labor force, Kwangtung is now installing more machinery such as small electric machines for crushing sugar cane, rice-grinding machines, mixers for livestock feed, threshers, and spray jet irrigation machines.

5. Population, 1957-66

Table 3 presents estimates of the total, urban, and rural population of Kwangtung Province for the years 1957-66. Reliable data are not available for any year since 1957, and the estimates are subject to a progressively greater margin of error. The estimates for total population were made on the assumption that the rate of growth was the same as that for all of China.

The urban population for Kwangtung Province as a whole was reported for 1957, but data for later years are available only for some cities and they are not consistent. For example, the Chinese have supplied the following population figures for Canton:

1957	1,840,000
1958	2,200,000
1963	2,000,000
1967	1,650,000

The figure for 1958 is not consistent with the figure for 1957 because the former included suburban areas. The reduction of 200,000 for 1963 may indicate that the figure for 1958 was rounded, or that the campaign to reduce the size of the urban population after the collapse of the

Table 3
Estimated Population of Kwangtung Province
Total, Urban, and Rural
1957-66

Million Persons at year end			
	<u>Total</u> ^{a/}	<u>Urban</u> ^{b/}	<u>Rural</u> ^{c/}
1957	38	6.7	31
1958	39	6.8	32
1959	40	6.8	33
1960	41	6.9	34
1961	41	7.0	34
1962	42	7.0	35
1963	43	7.1	36
1964	44	7.2	37
1965	45	7.3	38
1966	45	7.4	38

a. The population of Kwangtung is assumed to have grown at the same rate as the population of China as a whole (2.0 percent to 2.25 percent).

b. The urban population of Kwangtung is assumed to have grown at an average annual rate of 1 percent. The estimated urban population is presented to the nearest 100 thousand persons in order to show the year-to-year growth, but the second digit is not significant.

c. The rural population of Kwangtung is the residual.

Because of difficulties such as these, the urban population of Kwangtung cannot be estimated accurately, but it is believed to have grown at the rate of about 1 percent annually. Consequently, the figures for the urban population in Table 3 are even less reliable than those for the total population. The rural population is estimated as the residual, and it reflects errors in estimation of both the total and the urban populations.

The current birth control campaign probably has not been any more effective in Kwangtung than in other areas of China. The renewed campaign, which got under way in mid-1963, has not been going long enough to produce a measurable lowering of fertility rates. Any success achieved to date is almost certainly confined to the urban areas. An effective educational program will be necessary to overcome traditional beliefs in the countryside, where more than 80 percent of the people live, and no significant results can be expected for the next 10-15 years.

6. Consumption in Urban and Rural Areas

For China as a whole, the urban areas have consistently received higher grain rations than the rural areas since 1958. By contrast, consumption of grain per capita in rural areas of Kwangtung probably is slightly higher than in urban areas during years of good or normal harvest. Rural areas suffer more than urban areas during periods of poor harvest, because the government procures large amounts of grain for distribution in the cities. In 1957-58, the per capita consumption of grain averaged about 20 percent higher on the farms than in the cities. When bad weather and organizational changes resulted in very poor harvests during 1960-62, the consumption of grain per capita dropped much more in rural areas than in urban areas. In 1962 the per capita consumption of grain in the cities was almost 20 percent higher than on the farms. It was not until 1965, after agricultural production had recovered substantially, that grain consumption per person in the rural areas was slightly higher than in urban areas. Total calories consumed from all foods, including grain, were higher in urban than in rural areas during 1960-63 and lower during 1965-66. (See Table 4).

As indicated in Table 4, the output from private plots has accounted for an increasing share of the total caloric intake of both rural and urban residents since 1961. The foods produced on private plots -- vegetables, fruit, poultry, and meat -- are more nutritious but contain fewer calories per gram than grain. These foods have helped to restore the caloric intake and to improve substantially the quality of diet in Kwangtung Province, as well as in all of China, since 1961.

7. The Past as Prologue

The Communists have been hard pressed to feed the growing population of Kwangtung Province during the past 10 years. Consumption of cereals, which provide 80 to 90 percent of total caloric intake, was just sufficient in 1957 to permit normal physical activities and to maintain the standard of health. During 1960-62, consumption of grain was reduced by almost one-third on the farms, where more than 80 percent of the people live. Total caloric intake per capita reached a low in 1961 of less than 1,500 calories per day in rural areas and less than 1,700 in urban areas. People were compelled by public decree to reduce their physical activities, malnutrition was widespread, and the regime avoided mass starvation only by strict rationing, tolerating private plots, and importing wheat from abroad.

The return of more normal weather, together with increased application of chemical fertilizer and other farming improvements, permitted a recovery in grain consumption in Kwangtung during 1964-66, although not to the level of 1957. Private plots contributed about 15 percent of total caloric intake during 1964-66, compared with only about 10 percent in 1957 and nothing during the Leap Forward (1958-60). In spite of this partial recovery in the diet, the daily caloric intake per capita from all foods was only about 2,000 in 1966, still below the standard in many other countries, including some Asian countries.

The experience of the past 10 years suggests that Kwangtung must exert increased effort in agriculture during the next 10 years if the present minimum standard of consumption is to be maintained. Kwangtung, and China as a whole, does not have a significant food reserve, and the diet lacks sufficient vitamins and minerals to avoid malnutrition in years of poor harvest. The birth control campaign must be pushed consistently in the countryside in order to achieve even a small reduction in the rate of population growth within 10 years. There is no additional arable land in Kwangtung, and nearly all future increases in food output must come from higher yields.

The technology is available for a large expansion of agricultural output in China, and a reservoir of valuable experience exists in neighboring countries. Substantial investments would be required in chemical fertilizer, new irrigation facilities, and agro-technical improvements such as new seeds and better farming methods. Japan and Taiwan have demonstrated that a major breakthrough in agricultural productivity is possible with large investments and years of patient effort. Although China has not yet started a comparable program, the

long run prospects probably are good that productivity could be increased as much as it has in Japan and Taiwan. Peking, however, has made political and military commitments that, for the present, seem to prevent an all-out effort in agriculture. Whether or not China can continue to feed its growing population in the long run depends in large measure on the regime's willingness to pay the very substantial cost required.

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Approved For Release 2004/05/05 : CIA-RDP70S00385R000100250018-5

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